PFX

'the Prophet from Xanadu'
(PC World)

The Prophet from Xanadu

Clifford Barney

Philosopher and author Ted Nelson has written his visions down in a new book, which foretells the creation of a vast electronic library that holds all the world's writing—and anyone with a computer has a permanent library card.

Once again the prophet of the PC is trying to turn the computer world upside down. Nearly 10 years ago Ted Nelson published *Computer Lib*, the underground best-seller that accurately described the personal computer before one had ever been built and predicted its pervasiveness throughout our culture. Like other prophets, though, Nelson has never been considered entirely respectable in his own backyard.

Now he has favored us with *Literary Machines*, a far more personal vision but an equally outrageous one, as the subtitle suggests: *The Report on, and of, Project Xanadu/Concerning Word Processing, Electronic Publishing, Hypertext, Thinkertoys, Tomorrow's Intellectual Revolution [!], and Certain Other Topics Including Knowledge, Education and Freedom.*

This is vintage Nelson, by turns breezy, angry, funny, dull, subversive, untidy, serious, and imaginative. As usual, the message is heretical; in Nelson's world technology is driven by human needs, not by technical feasibility or commercial gain. "It doesn't matter who makes the chips, or what they can do for us," Nelson says. "The question is, what do we do with them."

The Vision of Xanadu

Nelson's goal is to implement Project Xanadu, a plan to use the world's computers as so many windows on all the writing ever produced, or as much of it as can be digitized. All this literature would be stored in one huge electronic file accessible from any PC or other computer. Anyone could browse randomly in this digital repository, choose any number of passages, and assemble them into a new document that would become another part of the Xanadu collection.

Nelson's name for the vast seamless document from which all subdocuments are assembled is *hypertext*, a word that has been seized upon so gratefully by the chroniclers of the information society that it has accumulated many interpretations. It really means, says Nelson with the pride of authorship, "nonsequential writing"—what that means is up to you.

A library, for instance, contains writing organized according to a specific sequence, in documents bound by covers and arranged on shelves. Project Xanadu's text, on the other hand, has no real boundaries and can be manipulated or added to according to the user's need or whim—that's hypertext. *Literary Machines* itself is a kind of hypertext frozen into print—a collection of Nelson prose that can be read backward or forward with equal reward.

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Why hypertext? What's so important or valuable about being able to sample anything from the computer's "shelves" instead of looking through a catalog or index to find a specific title or topic? One answer is in the difference between having entry to a library's stacks and having to request books from a librarian: we are more likely to find something we didn't expect when simply wandering the aisles than when a precise target has to be identified beforehand.

Community

Freedom through Computers

On another level Project Xanadu is political. Press critic A. J. Liebling noted that freedom of the press means most to those people who can afford one. But as any newspaper executive will tell you, the press is no good without trucks to deliver the papers. If Ted Nelson's vision of Xanadu ever reaches fruition, every PC owner will indeed have the distribution system to go with the personal "electronic press."

In its ideal state Xanadu will not only be a text organizing system, but an entire publishing environment with computers linked by phone, microwave, and satellite throughout the world. This is meant to be a business, of course, and it will be arranged, Nelson says, so that "everybody makes money," and (the corollary) "all systems are self-supporting."

We are a long way from that state; in fact, Xanadu is presently marketed only as a data base management system (DBMS) for businesses that can afford the kind of computing power it requires. Nevertheless, something of Nelson's political commitment may be seen in the dedication of this book to Eric Blair (George Orwell) and in the evangelistic fervor that permeates both Nelson's conversation and his prose.

Literary Machines describes Xanadu as a distributed information network on which every computer user is an independent node.

Ted Nelson is surprised that everyone doesn't share the Xanadu vision of interconnected computers unifying humanity. Occasionally this mass refusal to see leads him to the edge of paranoia: "Why do they call PCs micro-computers?" Nelson growls. "Is it to make us think they are inferior to real computers?"

Freedom is a constant theme in his writing, expressed throughout *Literary Machines* and in this passionate outburst from an on-line computer conference: "The idea of freedom has always been central to me; the author being free to create pathways, the reader being free to choose them. If we are to write on computers, these freedoms must be guaranteed from the ground up—writer's freedom and reader's freedom... This is the computer age. We computer people are accused, with good reason, of taking away human freedom. I say freedom now and forever, and that's what hypertext is for."

Xanadu Between Covers

What saves this message from stridency in *Literary Machines* is Nelson's warmth and his irrepressible humor. No one who takes himself too seriously could possibly contemplate franchising his beloved Xanadu stands so that giant neon *X*'s would dot the landscape like so many McDonald's arches (a proposal detailed in the book).

As the author describes it, "A cheery young person in futuristic garb will sit you down at a screen...at the moment of Xanadu Shock, when you *get it*, when you cry 'Holy——!' [the dashes are Nelson's], the kid grasps your forearm and says 'Mr. Jones, Welcome to Xanadu!'" Nelson is already hawking Xanadu handles (pen names), called *Xandles,* at $100 a pop, complete with wallet card "to subdue unbelievers."

Yet this same Ted Nelson once called me back, only minutes after ending a long and hilarious phone conversation, to make it clear that he is quite serious about his ideas. Fun's fun, he said, but Xanadu is not some idle fantasy. He has, after all, devoted 20 years of his life to it.

Nelson calls Xanadu a "virtual" system, a conceptual black box. You define it and then you implement it, and each instance is different. Nelson uses the automobile as an example to explain this notion: the virtuality of an automobile is how it feels to drive, Nelson says; the real car (its implementation) can have front- or rear-wheel drive, any number of cylinders, two doors or four, and so on.

Just as you can't say what a generic car looks like, except in general terms, you can't really say what Xanadu looks like. Nelson sometimes calls it a conceptual back end to the user's own computer system, which would be implemented differently by each user.

Nelson's description of the way in which Xanadu tracks alternate versions of text, allowing readers and writers to alter it freely, is at times almost lyrical, though at other times he makes Xanadu sound like a top-heavy collection of boiler plate through which documents quote one another endlessly without the need for an original contribution. ("That's the way Ted writes," says a friend, "with an Exacto knife and a pastepot.")

Yet the Nelson style is full of sock. He writes directly, if seldom in a straight line, and you are never in any doubt as to how he feels, though sometimes the meaning may be "hypervalued" and difficult to track.

Literary Machines describes Xanadu as a distributed information network on which every computer user is an independent node. The software that controls Xanadu organizes textual material according to user-specified instructions and stores them, not as entities, but as so many chunks to be accessed or reassembled on each retrieval. Nelson deliberately does not reveal exactly how this assembly and storage of hypertext is accomplished, although a great deal about its structure is revealed, and we are given a glimpse into a new kind of literature and a new method of publishing it.

Poetic Origins

Xanadu began, Nelson relates, as part of a project in which he attempted to write a text processor in assembly language for the IBM 7090. He wrote 40,000 lines of code, he says, which were never implemented. They remain in literary limbo like the 200 to 300 lines of text that Nelson's illustrious predecessor, Samuel Taylor Coleridge, penned in his imagination while seeing the original Xanadu vision, which we all read about in high school:

> In Xanadu did Kubla Khan
> A stately pleasure-dome decree.

Coleridge was interrupted by the notorious Person from Porlock and never did get the entire vision down; *Kubla Khan* remains one of the great fragments of English literature.

Nelson's vision of Xanadu also exists in fragmentary form in Ann Arbor, Michigan, on a Sun Microsystems 68000-based micro with 1 megabyte of main memory and 80 megabytes of disk storage. What is needed to complete this system is not the vision, but venture capital. Within 6 months, says Roger Gregory, leader of the Xanadu collective in Ann Arbor, an operational version of Xanadu (". . .a miracle of rare device/A sunny pleasure-dome with caves of ice!") could be demonstrated.

This Xanadu is a still a dream, the author concedes, caught like the original between vision and reality. Coleridge described the legendary Xanadu in two images, the wellspring of creation and the cold caves of infinite logical regress ("caverns measureless to man").

> The shadow of the dome of pleasure
> Floated midway on the waves;
> Where was heard the mingled measure
> From the fountain and the caves.

Today's Kubla Khans

Nelson's Xanadu seems to exist somewhere between the great vision of a unifying human achievement and its corporate compartmentalization. Today's Kubla Khans operate in a mercantile world and today's Xanadu is a product, with its own trade secret—the algorithm for managing text without running out of memory to store and track it or incurring so much overhead as to make searches impractical.

The algorithm is of such breadth and sophistication that it will revolutionize data processing when he reveals it, Nelson promises. System performance degrades only as the logarithm of the size of the data base, not the other way around. Skeptical? The Ann Arbor group has a prototype up, containing some 60 documents and is currently offering demonstrations to interested businesses.

Nelson, meanwhile, toils in San Antonio, Texas, where he most recently authored another literary work, entirely practical—the documentation for Datapoint's proprietary operating system, RMS. That book runs a solid 272 single-spaced pages. He has also designed his own word processor, written in FORTH for use on an Apple II or Apple IIe; the documentation comes on a card that fits into the floppy jacket. (You can obtain more information about the word processor, called *Jot*, from Nelson at the post office box listed at the end of this article.)

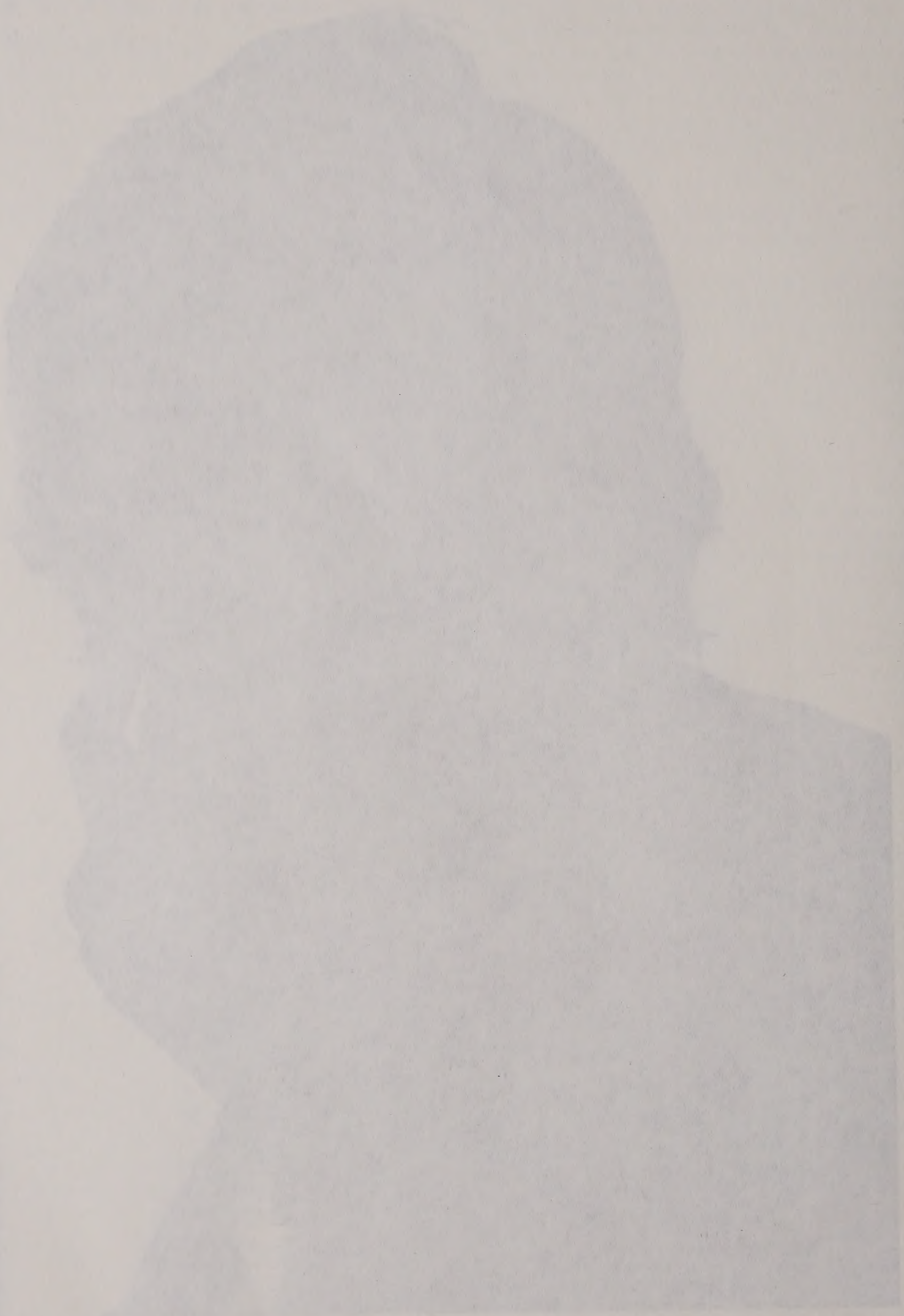
San Antonio is a long way from Ann Arbor, even in the network nation, and Nelson, in fact, seems isolated from the computer world he and the other gurus helped create. ("I'm the only one," he points out, "who hasn't gotten rich from it.") He professes not to miss the presence of a peer group. "I need disciples," he says boldly, "that's the only way it works." Gregory and the others in Ann Arbor were indeed disciples before they peeled off to make Xanadu commercial; still, that kind of remark can set off alarm bells in a society that is at least nominally egalitarian.

Yet, no one could see a snob in Ted Nelson. He is acknowledging his own role as a prophet who has had the vision and has been commanded to express it. Not an easy fellow to work with, possibly, nor is his book easy to evaluate; you need an instinct about when Nelson is on the mark and when he's not. Or as Coleridge presciently put it in *Kubla Khan:*

> . . .Beware! Beware!
> His flashing eyes, his floating hair!
> Weave a circle round him thrice,
> And close your eyes with holy dread,
> For he on honey-dew hath fed
> And drunk the milk of Paradise!

Clifford Barney been writing about computers and communications for more than a decade. His work is published regularly in both trade and general interest magazines.

Literary Machines/The Report on, and of, Project Xanadu/Concerning Word Processing, Electronic Publishing, Hypertext, Thinkertoys, Tomorrow's Intellectual Revolution [!], and Certain Other Topics Including Knowledge, Education and Freedom by Ted Nelson is available from the author at P.O. Box 128, Swarthmore, PA 19081. Computer Lib and Literary Machines are available for $15 each from The Distributors, 702 S. Michigan, South Bend, IN 46618.



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